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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,215	03/23/2004	Yong-jin Ahn	1293.1278C6	1661

49455 7590 07/14/2006

STEIN, MCEWEN & BUI, LLP
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

EXAMINER

CHOW, LIXI

ART UNIT	PAPER NUMBER
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2627

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,215

Applicant(s)

AHN ET AL.

Examiner

Lixi Chow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

1. Claims 1-20 are pending in this application.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/25/06 has been entered.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/806107. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are relating to information storage medium for having mark and space recorded thereon. Even though, claim 4 of Application No. 10/806107 does not recite "the first state corresponding to a recording pattern of the waveform; and a second state corresponding to an erase pattern of the waveform"; however, claim 4 of

Application No. 10/806107 does recite “a recording waveform comprising a recording pattern, and erase pattern...” The NRZI data signal output from the modulation unit corresponds to “the first state is a mark formed by a first level of an NRZI data signal, and the second state is a space formed by a second level of the NRZI data signal” as recited in claim 2 of instant Application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3, 6, 7 and 9-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 19, and 20, each recite in part, “...a power level of a pulse between an end point of the erase pattern and a start point of a leading pulse of the recording pattern...”; however, it is ambiguous as to whether such pulse can exist. Essentially, the end point of the erase pattern is the beginning point of the recording pattern. In contrast, Applicant does in fact disclose a time period (Tsfp) from a point where the NRZI data is transited from a low level to high level at the point when the first pulse constituting the recording pattern starts. However, as indicated in the Applicant’s disclosure, Tsfp is a period, not a pulse. Therefore, the subject matter in claims 1, 19 and 20 is indefinite. Furthermore, claim 15 recites, “the another multi-pulse of the recording pattern further comprises a recording pulse having a recording power greater than the power of a first one of the pulses of the recording pattern”. However, Applicant does not show such configuration of recording power. Instead, Applicant

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does show a recording pulse of the recording pattern having recording power greater than the power of the first portion of the leading pulse of the recording pattern". Therefore, it is not clear as to whether the "first one of the pulses of the recording pattern" is intended to mean "first portion of the leading pulse of the recording pattern".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3, 9, 11, 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Dekker (Pub. No. 2002/0003762).

Regarding claim 1:

Dekker discloses an information storage medium which stores data recorded using a waveform, comprising:

a first state corresponding to a recording pattern of the waveform (see Fig. 1A; first state corresponds to write pulses 13); and

a second state corresponding to an erase pattern of the waveform (see Fig. 1A; second state corresponds to erase pulses 14), wherein:

the erase pattern comprises a multi-pulse having a power level of a leading pulse of the erase pattern set at a low level of the multi-pulse and a power level of a pulse/period between an

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end point of the erase pattern and a start point of a leading pulse of the recording pattern is set at a high level of the multi-pulse (see Fig. 1A; the leading pulse of the erase pattern is the end point of the period 11, which has a low power level; the pulse/period between the end point of the period 12 and the start point of the leading pulse of the recording pattern is at power level P1, which has a high power level compare to the leading pulse of the erase pattern), and the recording pattern and the erase pattern are concatenated by a cooling pulse (see Fig. 1A; cooling pulse is the pulse between write pulses 13 and erase pulses 14).

Regarding claim 2:

Dekker discloses the information storage medium, wherein:

the first state is a mark formed by a first level of an NRZI data signal, and

the second state is a space formed by a second level of the NRZI data signal (see Fig. 1A and paragraph [0001]).

Regarding claim 3:

Dekker discloses the information storage medium, wherein the recording pattern comprises another multi-pulse, and the cooling pulse extends from the multi-pulse of the recording pattern to the multi-pulse of the erase pattern (see Fig. 1A).

Regarding claim 9:

Dekker discloses the information storage medium, wherein:

the erase pattern is recorded sequentially after the recording pattern (see Fig. 1A),

the recording pattern comprises another multi-pulse (see Fig. 1A), and

a first one of the another multi-pulses of the recording pattern is adjusted to have a power that is other than a power of the first one of the multi-pulses of the erase pattern (see Fig. 1A; the

first one of the another multi-pulses of the recording pattern has a P_1 power level, which is a power that is other than a power of the first one of the multi-pulses of the erase pattern, which is below P_1).

Regarding claim 11:

Dekker discloses the information storage medium, wherein the multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power (see Fig. 1A, first pulse power is P_1 and second pulse power is P_e).

Regarding claim 13:

Dekker discloses the information storage medium, wherein the multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power, and the power of the first one of the another multi-pulses of the recording pattern is equal to the first pulse power (see Fig. 1A first pulse power is P_1 , second pulse power is P_e and power of the first one of the another multi-pulses of the recording pattern is P_1).

Regarding claim 14:

Dekker discloses the information storage medium, wherein the another multi-pulse of the recording pattern further comprises a recording pulse having a recording power greater than the power of the first one of the pulses of the recording pattern (see Fig. 1A, the other power level having greater power than the first one of the pulses of the recording pattern is P_w).

9. Claim 19 is rejected under 35 U.S.C. 102(e) as being anticipated by Ichihara (US 6,396,792).

Regarding claim 19:

Ichihara discloses an information storage medium which stores data recorded using a waveform, comprising:

a first state corresponding to a recording pattern of the waveform (see Figs. 1A-1E; Pa level corresponds to the first state); and

a second state corresponding to an erase pattern of the waveform (see Fig. 1B; Pc1 corresponds to the second state), wherein:

the erase pattern comprises a multi-pulse having a power level of a leading pulse of the erase pattern set to a high level of the multi-pulse and a power level of a pulse/period between an end point of the erase pattern and a start point of a leading pulse of a recording pattern is set to a high level of the multi-pulse (see Fig. 1B, leading pulse of the erase pattern has power level of Pc1 (high level), and pulse/period between the end point of the erase pattern and the start point of the leading pulse of the recording pattern has a power level between Pc1 and Pc2, which is also a high level), and the recording pattern and the erase pattern are concatenated by a cooling pulse of the waveform (see Fig. 1B, the cooling pulse has a power level of Pc2).

10. Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Nishiuchi et al. (US 5,291,470; hereafter Nishiuchi).

Regarding claim 20:

Nishiuchi discloses an information storage medium which stores data recorded using a waveform, comprising:

a first state corresponding to a recording pattern of the waveform (see Fig. 1(b); P1 and P2 correspond to the waveform having the first state); and

a second state corresponding to an erase pattern of the waveform (see Fig. 1(b); S1 and S2 correspond to the waveform having the second state), wherein:

the erase pattern comprises a multi-pulse having a power level of a leading pulse of the erase pattern set to a low level of the multi-pulse and a power level of a pulse/period between an end point of the erase pattern and a start point of a leading pulse of a recording pattern is set to a low level of the multi-pulse (see Fig. 1(b)), and the recording pattern and the erase pattern are concatenated by a cooling pulse of the waveform (see Fig. 1(b); cooling pulse corresponds to the pulse between P1 and S1).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ushiyama et al. (US 2002/0176338; hereafter Ushiyama) in view of Ichihara (US 6,396,792).

Regarding claims 4 and 5:

Ushiyama discloses an information storage medium which stores data recording using a waveform, comprising:

a first state corresponding to a recording pattern of the waveform (see Fig. 4); and

a second state corresponding to an erase pattern of the waveform (see paragraph [0020];

Ushiyama teaches the recording parameter having erase power, which is the second state), wherein:

the recording pattern comprises a first multi-pulse having a plurality of first pulses, and the erase pattern comprising a erase pulse, and a first one of the first pulses of the recording pattern being adjusted according to a property of the last one of the erase pulse of the erase pattern (see paragraph [0049]; the width of the first pulse of the recording pulse depend on the length of the space portion located in front of the recording pattern); and

the waveform further comprises a first cooling pulse as a portion of the recording pattern (see Fig. 4, the low power level or the off pulse of the multi-pulse is the first cooling pulse).

Ushiyama fails to disclose the erase pattern comprises a second multi-pulse having a plurality of second pulses, and/or a second cooling portion as a portion of the erase pattern; however, Ichihara discloses an information storage medium which stores data recording using a waveform, wherein the erase pattern comprises a second multi-pulse having a plurality of second pulses (see Fig. 1B); and a second cooling portion as a portion of the erase pattern (see Fig. 1B, the second cooling portion is the portion having Pc2 power level of the multi-pulse erase pattern).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the recording waveform used in the information storage medium of Ushiyama to include multi-pulse erase pattern and second cooling portion part of the erase pattern as taught by Ichihara. One would have been motivated to do this, because it is possible to overcome the fail-to-erase problem and improve overwrite erasability when employing erase pattern that includes row of pulses.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dekker in view of Clark et al. (US 5,802,031; hereafter Clark). For a description of Dekker, see the rejection of paragraph 7, above.

Regarding claim 7:

Dekker does not disclose the data recorded using the waveform modulated according to a Run Length Limited (RLL) (1,7). However, Clark discloses the recording of data using the waveform modulated according to a Run Length Limited (RLL) (1,7) (see Clark, col. 6, lines 51-59).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have adopted the method of recording data according to a Run Length Limited (RLL) (1,7) in the medium of Dekker as taught by Clark. One of ordinary skill in the art would have been motivated to do this, because recording of marks and spaces of length 2T to 8T for standard M-O recording system is possible (see Clark, col. 6, lines 51-59). Hence, recording of marks or spaces amongst different types of recording format can be achieved.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ushiyama in view of Ichihara, and further in view of Clark et al. (US 5,802,031; hereafter Clark). For a description of Ushiyama in view of Ichihara, see the rejection of paragraph 11, above.

Regarding claim 8:

Ushiyama and Ichihara do not disclose the data recorded using the waveform modulated according to a Run Length Limited (RLL) (1,7). However, Clark discloses the recording of data using the waveform modulated according to a Run Length Limited (RLL) (1,7) (see Clark, col. 6, lines 51-59).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have adopted the method of recording data according to a Run Length Limited (RLL) (1,7) in the medium of Ushiyama as taught by Clark. One of ordinary skill in the art would have been motivated to do this, because recording of marks and spaces of length 2T to 8T for standard M-O recording system is possible (see Clark, col. 6, lines 51-59). Hence, recording of marks or spaces amongst different types of recording format can be achieved.

Response to Arguments

15. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. No comments will be made in this Office Action regarding the allowability of claims 6, 10, 12 and 15-19 due to the rejection under the 35 U.S.C 112, 2nd paragraph.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


ANDREA WELLINGTON
SUPERVISORY PATENT EXAMINER